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TEACHER TRAINING IN MALAWI: EFFICIENCY AND COSTS

FEBRUARY 2012

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(MTPDS)

Teacher Training in Malawi: Efficiency and Costs
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Acronyms

EMIS	Education Management Information System
ESARO	Eastern and Southern Africa Regional Office
IPTE	Initial Primary Teacher Education
MIITEP	Malawi Integrated In-service Teacher Education
MoEST	Ministry of Education, Science and Technology
MTPDS	Malawi Teacher Professional Development Support
ODL	Open and Distance Learning
TEMIS	Teacher Education Management Information System
TTC	Teacher Training College
UNICEF	United Nations Children’s Education Fund
USAID	United States Agency for International Development

1. Introduction

The present condition of the Malawian education system is to a large extent still an artifact of the decision to immediately implement free primary education (FPE) in 1994. In a single year primary schools had to accommodate a 50% increase in enrollment – 1,000,000 additional children. The resulting shortage of some 20,000 teachers, which has persisted from 1994 to the present, is most evident in Malawi's exceptionally high average pupil-to-teacher ratio. To meet the continuing high demand for primary teachers, Malawi has reformed and continues to reform its teacher recruitment, training and deployment policies.

Steiner-Khamisi and Kunje (2011) provide a concise summary of the evolution of teacher training in Malawi. Two basic approaches have been utilized, residential training at teacher training colleges (TTC) and distance learning programs. From 1964 to 1994, pre-service teacher education required two years in residence at a TTC. An alternative approach to teacher training was also provided through a three year distance learning (correspondence) program up until 1993. For a period of four years, from 1993 to 1997, Malawi experimented with a one year pre-service program as one way to accelerate the recruitment, training and deployment of teachers. Similarly, an emergency distance learning program was employed from 1997 until 2003 – the Malawi Integrated In-service Teacher Education Program, or MIITEP. MIITEP placed teachers in schools and provided them with distance-based materials, occasional training workshops, and ongoing supervision and support to assure completion of their training. MIITEP was discontinued because of concern over the quality of teachers being produced due to low recruitment standards, poor attendance in periodic training sessions and inadequate supervision (Steiner-Khamisi and Kunje, 2011, p. 11).

At present, residential pre-service training is still one year in duration, but since 2005 that year of TTC-based training has been followed by one year of supervised teaching. The current Initial Primary Teacher Education program (IPTE) is referred to as IPTE 1+1, indicating the one year of residential and one year of on-the-job training needed for certification. The most recent incarnation of distance learning is referred to as the Open and Distance Learning (ODL) program, which was launched in 2010. ODL is delivered as a series of correspondence modules to be completed by trainees over the course of 2 or 3 years, with evaluations at the end of the first set of modules, then again upon completion of the second set.

Many issues have been raised about the efficacy of these training programs. For example, one could legitimately question how well TTC-based courses prepare teachers in terms of curricular knowledge, instructional methods, and classroom management skills. And one could question whether the year of supervised teaching is anything different than being simply placed in a

school and assigned a class to teach, especially when reviews of the second year of training reveal grossly inadequate support and virtually no mentoring for most teacher trainees (see for example Ndalama and Chidalengwa, 2010). This study is not able to address the question of how well the content and process of both the residential and school-based training prepare teachers to be successful in their jobs. Rather, this study is designed to evaluate how efficiently and at what costs teachers are being produced through these two main channels of teacher preparation.

The USAID-funded Malawi Teacher Professional Development Support (MTPDS) project is tasked with assisting the Ministry of Education, Science and Technology (MOEST) to strengthen teacher policy, support and management systems. In a country with such unrelenting demand for well-trained teachers, it behooves all the players involved – the Government of Malawi and all its financial and technical partners – to seek to maximize the efficient use of available resources for teacher training and preparation. One pressing question needs to be, how can Malawi ensure that each kwacha expended on teacher development contributes to the greatest number of quality teachers being available to teach in the primary schools where they are needed? To that end, TPDS commissioned an analysis of the IPTE 1+1 and ODL programs in each of the TTCs. Specifically, data from MOEST and from the TTCs were collected and analyzed to answer the following questions:

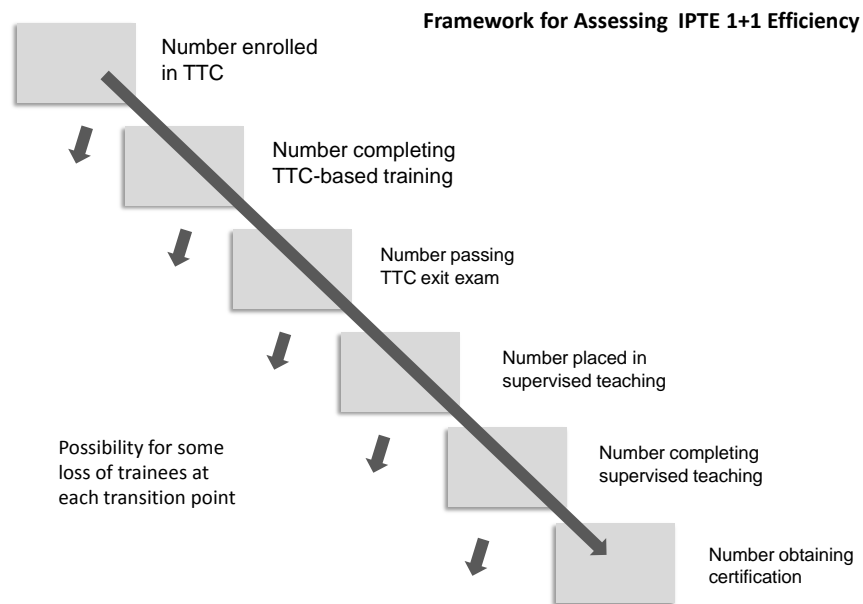
- How efficiently are the TTCs producing graduates of the one year residential training program who can be placed in schools?
- How efficiently are the TTCs producing certified teachers – those who have successfully completed the 1 year residential and 1 year on-the-job components of the IPTE 1+1?
- How expensive is the IPTE 1+1 program?
- How expensive is the ODL program?
- How do costs vary across TTCs?

This report is organized in five sections. This introduction is followed by a discussion of the framework for the study (Section 2), which includes discussion of the TTCs included, the different types of data compiled and the analyses employed. Section 3 of the report presents the results of the various analyses. The guiding questions are addressed in Section 4, which also shares the author's conclusions and examines the implications of the findings of this study. The report ends with Section 5, in which the limitations of the available data are discussed and the methods for overcoming those limitations summarized.

2. Framework of the Study

Analytical Framework

The approach to this particular study is dictated for the most part by the structure of the teacher initial training model currently being implemented by the MOEST. As mentioned earlier, the IPTE 1+1 training program includes a year of residential course work at a TTC followed by a year of supervised teaching in a regular primary school. This program has several transition points that lend themselves to analysis of how teacher trainees pass from one aspect of the training to the next. Teachers who are enrolled in a TTC must complete a year of course work and sit for an exam. During the subsequent school year, they are placed in a primary school for their one year of supervised teaching. At the culmination of that year (which actually is usually less than a full academic year as placements are not finalized until several months into the school year), teachers are evaluated to determine if they can be fully certified. Therefore, this study compares the number of trainees who begin a training program in a given year to the number from that same cohort who manage to make it through to certification, with data collected on each of the transition points as indicated in the figure below.



For each TTC, the percentage of trainees who enroll and make it all the way to full certification represents a measure of the efficiency of the IPTE 1+1 training. If a TTC has a higher percentage of enrollees who become certified, it can be said to be more efficient. A further indicator of the effectiveness of initial teacher training is the proportion of trainees who not only become

certified teachers, but who remain in the profession some years afterwards. Data from the MOEST EMIS files may allow us to estimate the percentage of all the teachers who were trained through IPTE 1+1 and who currently are still serving in the profession.

An original assumption was that a similar analytical framework could be applied to the ODL teacher training program. However data on the progression of ODL trainees through the different stages of that training are not available. In fact, data on ODL training as obtained from the TTCs participating in that program are quite sparse (see Section 5 for discussion of the data limitations).

In addition to examining how efficiently TTCs produce certified teachers (and identifying the points in the training process where inefficiencies may manifest themselves), this study also examines the costs of the IPTE 1+1 program in each TTC. To account for variations in total budgets that derive from the different sizes of the TTCs, the unit costs (total budget divided by number of trainees enrolled) for each TTC are compared. Some analysis of the composition of each TTC's budget is performed to identify the major drivers of any differences in unit costs. Additionally, the cost per certified teacher is also calculated for each TTC, providing an indicator of cost-effectiveness of the training program as implemented in each college.

Data Included in the Study

There are currently 12 teacher training colleges in Malawi. Six TTCs are public and six are private as indicated in the adjacent table. Data were gathered on IPTE cohorts beginning with IPTE 1 in 2005, through IPTE 6 in 2010. Not all data are available for all colleges and for all 6 cohorts. Most frequently a consistent set of data was found covering IPTE cohorts 1 through 5 for five of the public TTCs (Machinga is missing) and for four of the private colleges (Dowa and Emmanuel are missing). When

possible, data were pulled from the MOEST information system (EMIS). Data were also obtained through administration of a survey of each TTC. It is important to note that the data obtained through EMIS and those obtained directly from the TTCs do not always match. There is in fact considerable cause for concern regarding the accuracy and reliability of data on teacher training, from whatever source (see Section 5). Budget and expenditure data are only available for 2008 and 2009 and only for the same five public and four private TTCs.

Public TTCs	Private TTCs
Blantyre	Amalika
Karonga	Chilangoma
Kasungu	Dowa
Lilongwe	Emmanuel
Machinga	Maryam Girls'
St. Josephs	Loudon

3. Results of the Analysis

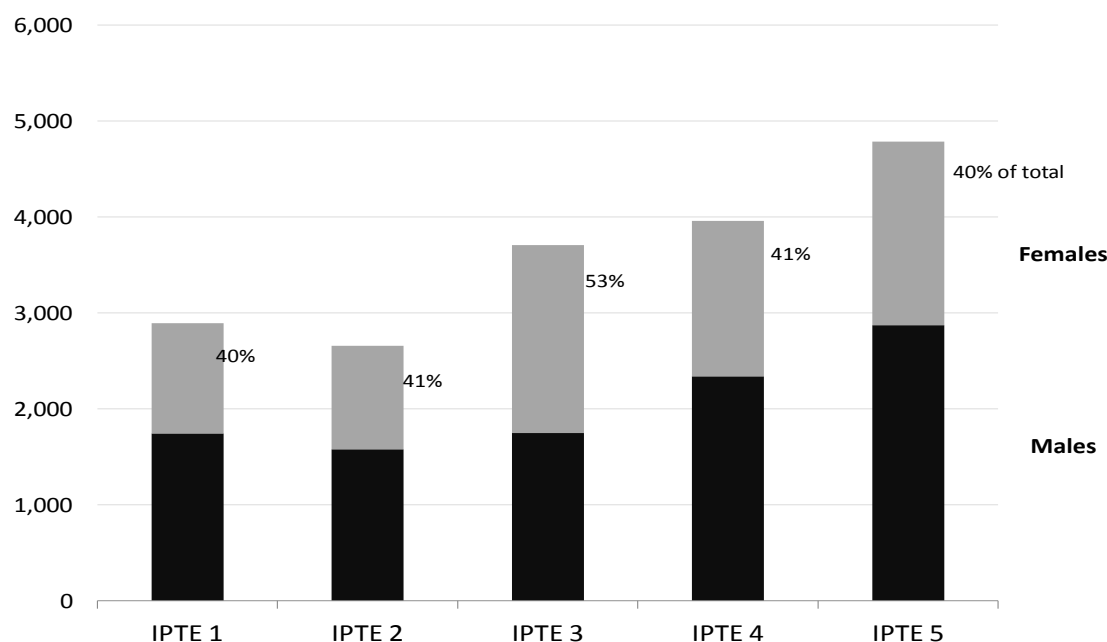
Growth of IPTE 1+1: Enrollment in residential portion of the IPTE 1+1 program has increased from fewer than 2,900 in 2005 to over 4,700 in 2009 (the most recent year- the 2009/10 academic year - for which reliable data are available). Table 1 and its accompanying graph show the overall growth in enrollment and the relatively unchanged proportion of female trainees. Female trainees made up 40% of the TTC enrollment in 2005, and apart from a slight increase in 2007, were at 40% again in 2009.

Table 1: Total TTC Enrollment

	IPTE 1 (2005-06)	IPTE 2 (2006-07)	IPTE 3 (2007-08)	IPTE 4 (2008-09)	IPTE 5 (2009-10)
Male	1,744	1,582	1,748	2,339	2,873
Female	1,152	1,077	1,962	1,621	1,914
Total	2,896	2,659	3,710	3,960	4,787

Source for table and graph: EMIS and TTC surveys, including data from all 12 TTCs

Total TTC Enrollment (2005-06 to 2009-10)



Growth in enrollment in teacher training colleges is attributable to two things. Roughly 59% of the additional enrollment is in the four private colleges (Amalika, Loudon, Chilangoma and

Dowa) and one public college (Machinga) that have opened since 2008. The other 41% of the additional enrollment is from growth in the number of students at the other existing TTCs.

Efficiency of IPTE 1+1: While enrollment has been growing, the efficiency (defined as the percentage of enrollees at a TTC who then go on to become certified teachers); of the IPTE 1+1 program is approximately the same for the fifth cohort as it was for the first. Table 2 below shows the percentage of male and female enrollees in IPTE cohorts 1 through 5 who successfully made it through the TTC and school based portions of their training and became certified teachers.

Table 2: Percent of TTC Enrollment Certified for Each Cohort

	IPTE 1 (2005-06)	IPTE 2 (2006-07)	IPTE 3 (2007-08)	IPTE 4 (2008-09)	IPTE 5 (2009-10)
Male	86%	91%	88%	85%	90%
Female	84%	91%	90%	81%	75%
Total	85%	91%	89%	84%	84%

Source: Author's calculations based on data from TPDS Survey of TTCs, DTED and EMIS. Note these aggregate figures include only 9 of the 12 colleges, as data on completion of training and certification were not available for three TTCs (Dowa, Loudon and Machinga).

It is interesting to note that male and female rates of certification for the first IPTE cohort (IPTE1) were almost equivalent. Both improved for IPTE2 and IPTE3. Female certification rates subsequently declined and are therefore now considerably lower than male rates for the latest IPTE cohort for which data are available (IPTE5). Overall, 16% of the most recent set of trainees who enrolled in the nine TTCs for which data are available did not become fully certified teachers. For female trainees, 25% did not become fully qualified teachers.

Table 3 below shows the rates of certification for each of the nine colleges. To smooth out some of the year-to-year fluctuations in the data, average figures are used across all the years for which data are available. What are presented therefore are the average enrollments and average rates of efficiency for the IPTE program for the years it has been in operation in each of the nine colleges listed below.

The Lilongwe TTC has the highest average rate of efficiency at 96%, and it is essentially the same for both male and female trainees. Chilangoma has the lowest, with only 43% of its students managing to complete the entire IPTE 1+1 program (35% of male trainees and 47% of

female). St. Joseph's, a women's college, has the next lowest rate of efficiency at 75%. The others are closer to the overall average of 84%.

Table 3: Average Rates of Certification for Each TTC

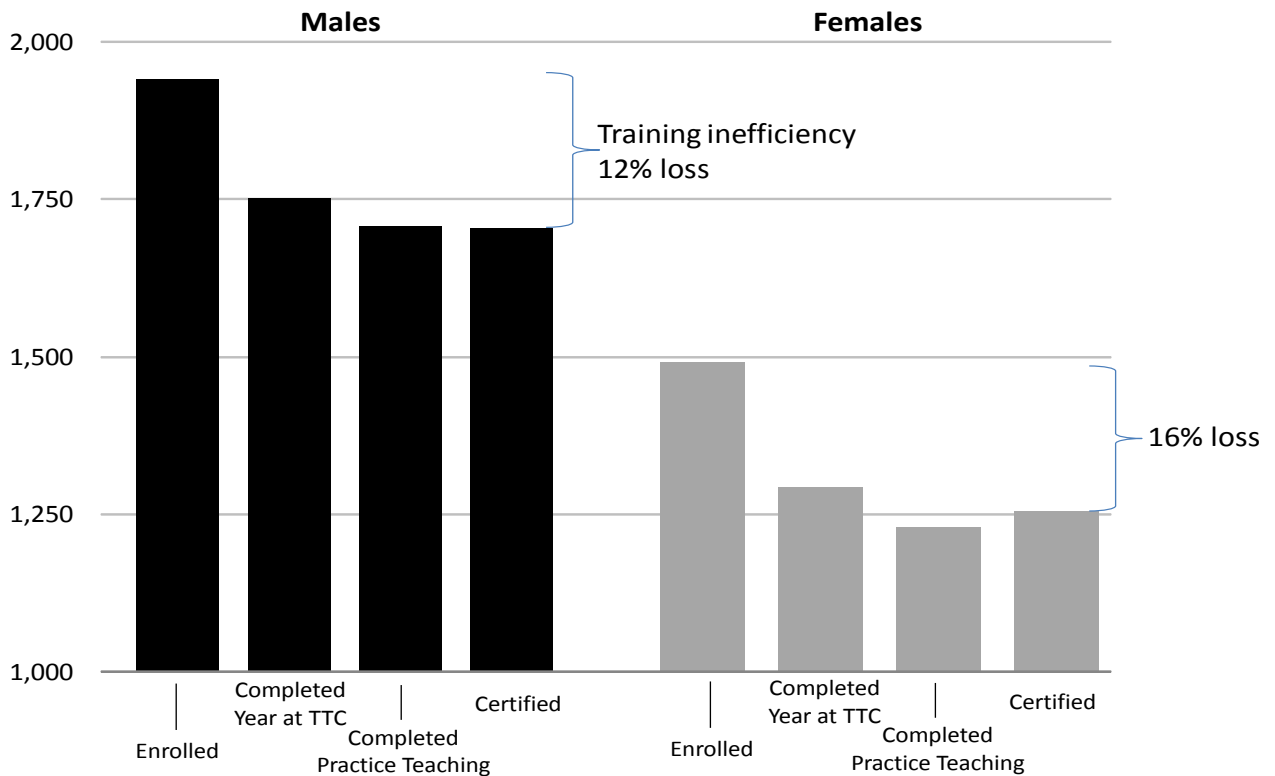
Public TTCs		Male	Female	Total
Blantyre	Average Enrollment	521	244	765
	Average % Certified	91%	84%	89%
Karonga	Average Enrollment	269	254	523
	Average % Certified	81%	87%	84%
Kasungu	Average Enrollment	551	192	743
	Average % Certified	85%	93%	87%
Lilongwe	Average Enrollment	534	212	745
	Average % Certified	95%	96%	96%
St. Joseph's	Average Enrollment		388	388
	Average % Certified		78%	78%
Private TTCs				
Amalika*	Average Enrollment	17	49	66
	Average % Certified	78%	84%	82%
Chilangoma*	Average Enrollment	76	141	217
	Average % Certified	35%	47%	43%
Emmanuel	Average Enrollment	29	30	59
	Average % Certified	83%	88%	85%
Maryam Girls'	Average Enrollment		95	95
	Average % Certified		85%	85%

Source: Author's calculations based on TTC surveys and DTED and EMIS data. Note that Amalika and Chilangoma averages are respectively based on only two years of data.

To more fully understand where in the IPTE training program inefficiencies are arising, more detailed data are presented in the figure below. Averaging across the nine TTCs for both female and male trainees, the number of students enrolled in the residential training program is compared to the number that completes the TTC course of study and passes the end of year exam. Similarly the numbers completing the school-based portion of their training and passing the certification exam are also plotted. On average, 12% of male trainees and 16% of female trainees fail to complete their training and become certified. The graph shows that for both men and women, the largest drop off occurs during the year of residential training. The reasons given for trainees dropping out at any point during the IPTE 1+1 were most often joining another profession for men or marriage and/or pregnancy for women.

Teacher Training in Malawi: Efficiency and Costs

Flow of Trainees through the IPTE 1+1 Training Model



The figure below shows that for each of the nine colleges, the story is pretty much the same. Across all the colleges, trainees most often exit the IPTE 1+1 program during or at the end of the residential training year, with the exception of Chilangoma TTC. Chilangoma affiliated trainees experienced the greatest dropout during the year of in-school, supervised training.

Teacher Training in Malawi: Efficiency and Costs

Efficiency in Production of Certified Teachers for Selected TTCs

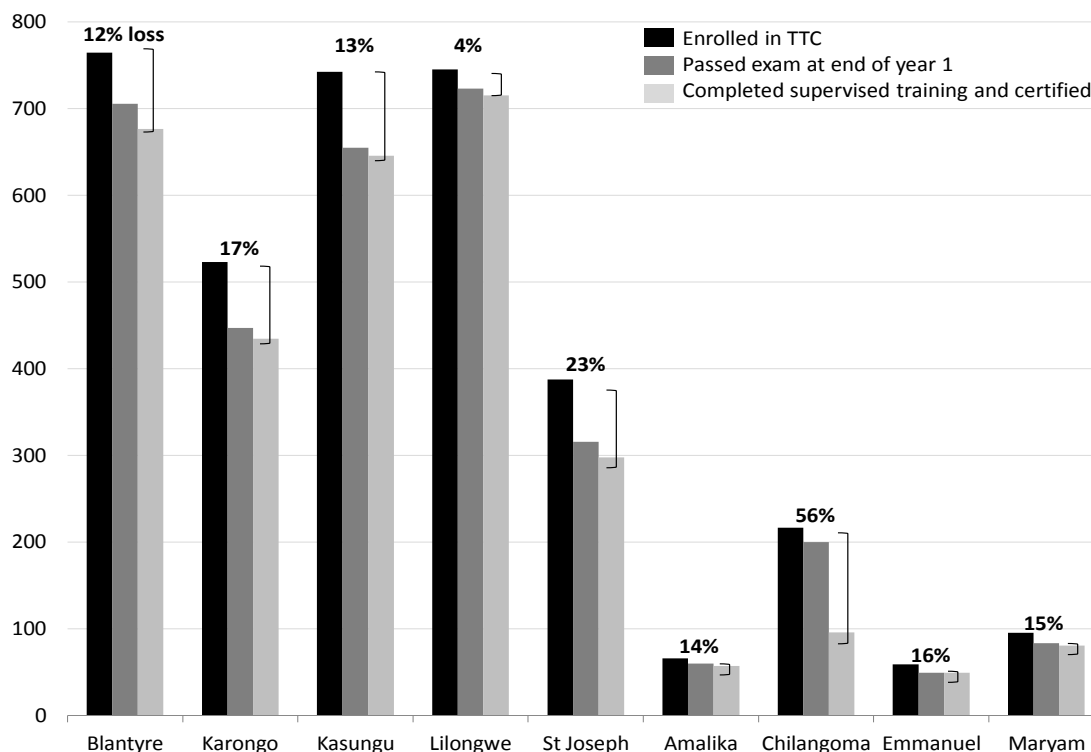


Table 4: TTC Costs Per Student

	Average Enrollment (2007-2009)	Average Cost Per Trainee (in Kwacha)
Blantyre	888	124,000
Karonga	628	163,000
Kasungu	764	164,000
Lilongwe	812	247,000
St. Joseph	482	183,000
Amalika	66	745,000
Chilangoma	217	300,000
Emmanuel	66	638,000
Maryam Girls'	132	268,000

Costs of IPTE 1+1: For the same set of nine TTCs, we are also able to compare costs

Source: Author's calculations based on TPDS survey.

associated with running the IPTE 1+1 program, albeit using the limited data on budgets and expenditures that are available. Table 4 shows the difference in costs per student for each of the nine TTCs for which data are available. The top portion of the table includes the public TTCs; the bottom lists the private ones. Figures are based on averages over the last two years of budget data (when two years were available) and the last three years for enrolment figures. This is done to help smooth out some of the year-to-year variations in budget information and to compensate for missing data.

A few things stand out in these data. First, the costs per trainee among public TTCs are fairly consistent, except for Lilongwe, which is about 56% above the average of the other four colleges. Second, the costs per student for the private TTCs are considerably higher than those of the public ones (almost three times as high on average), especially for the two TTCs with the smallest enrollments – Amalika and Emmanuel. Which leads to the third observation: TTCs with small enrollments have the highest unit costs. At issue is whether their enrollments are small because they cannot attract sufficient students to make full use of the facilities they are paying to operate, or if their costs are too high for the level of enrollment they are designed to accommodate.

One way to assess why unit costs are so much higher in some institutions than others is to compare one of the main cost components in each college's budget, namely staff. Information on staffing is available for eight of the nine TTCs (Lilongwe TTC did not provide data on its staff). We can compare the number of tutors employed at each college as well as the number of other staff, and do so using student to staff ratios to account for differences in the size of the TTCs.

Table 5 reveals that there is great variation in the level of staffing across these eight TTCs. Emmanuel has the lowest number of students per tutor and per staff member. Its student to tutor ratio is almost 2.5 times smaller than that of Chilangoma, which has the highest ratio. Emmanuel also has an extremely low student to total staff ratio. There are 2.3 students for every person on staff at Emmanuel TTC. The same is true for Amalika. Maryam Girls' college also has a very low ratio of students to staff.

Table 5: Staffing Ratios in Selected TTCs

	Students/ Tutor	Students/ Total Staff
Emmanuel	9.4	2.3
Amalika	11.0	2.3
Maryam Girls'	12.2	2.9
Karonga	13.4	9.0
Blantyre	15.0	10.5
Kasungu	15.2	10.7
St. Joseph	21.9	7.6
Chilangoma	24.1	6.2

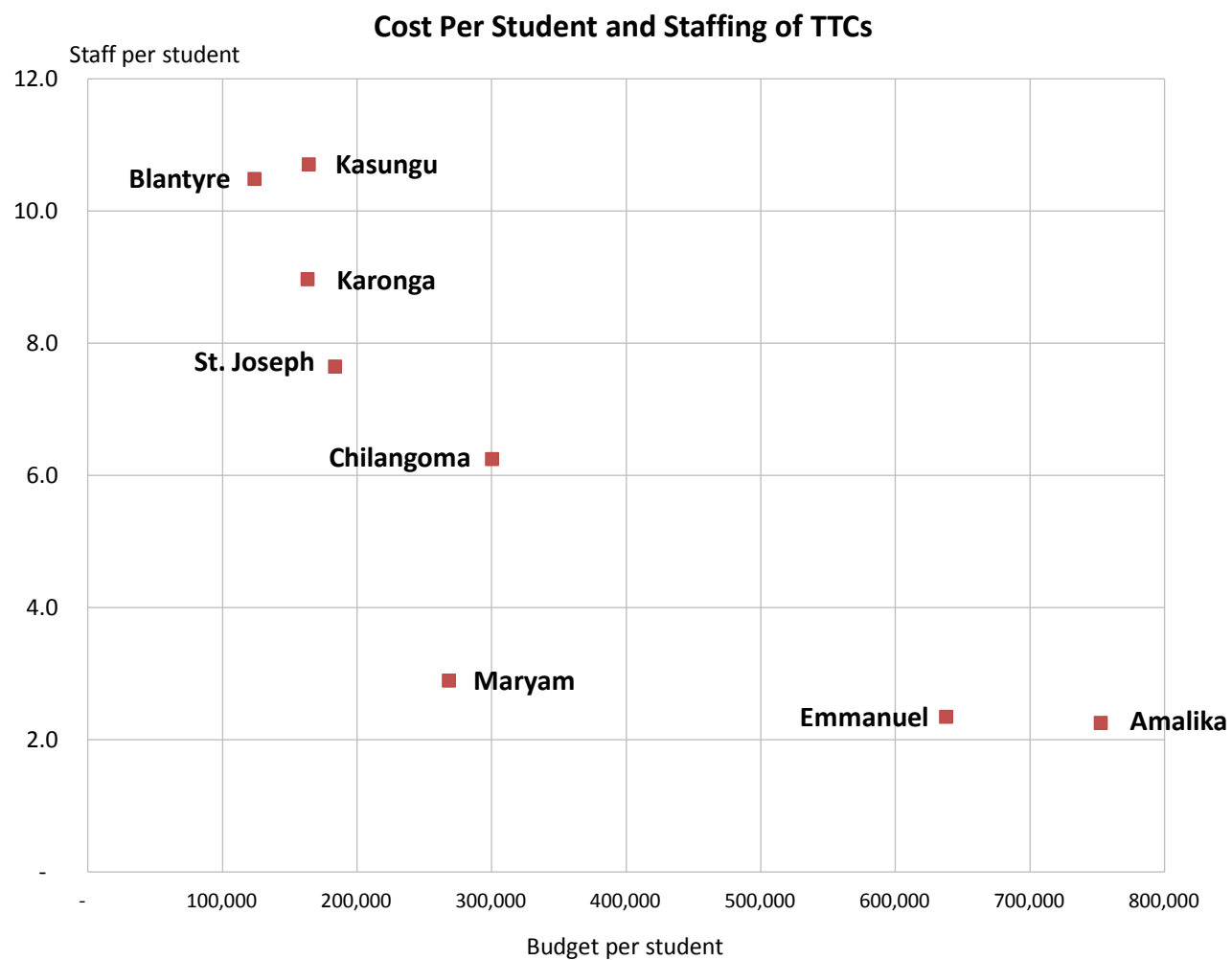
Source: Author's calculations

With this much variation in staffing patterns across these eight TTCs, it is apparent that no norms are being applied for how many teacher trainees can be served by each TTC tutor, nor for overall efficient staffing of a teacher training college. Inefficiencies in staffing in many countries are usually a product of how institutions like TTCs are funded. If staff salaries are paid as a central ministry or civil service allocation, independent of the budget of the institution, then colleges will tend to accrue additional staff. One way this problem is sometimes addressed is to base the full budget allocation for a TTC on its enrollment – providing a set per student

allocation, which the institution can then manage itself. They can hire staff, purchase equipment, or provide different services as they see fit, while being held accountable not for particular staffing ratios, but for how efficiently they produce teachers who meet professional standards.

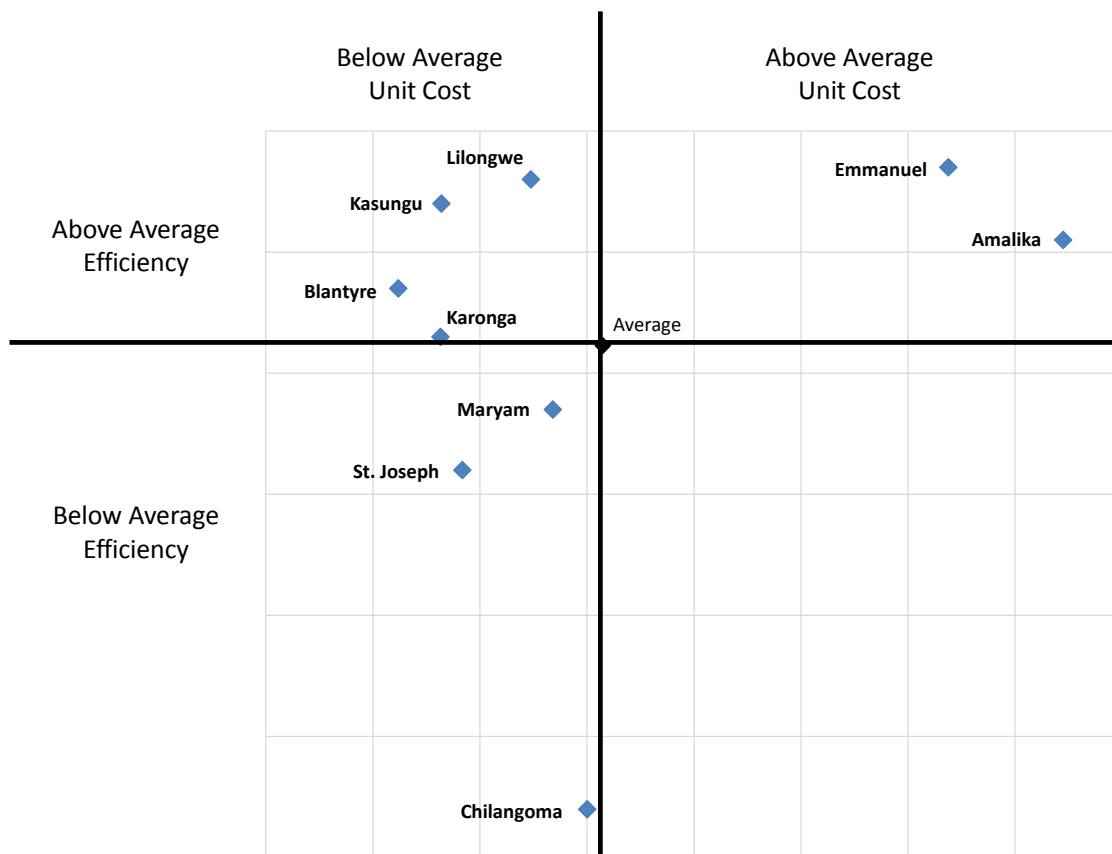
The differences in unit costs among the TTCs are to a large extent driven by these differences in staffing ratios. The graph below shows the relationship between the student-to-total staff ratio (the vertical axis) and unit costs (the horizontal axis). Schools with the lowest student-to-staff ratios are the ones with the highest unit costs. Yet there is no evidence that these lower ratios lead to better, more efficient teacher preparation.

Teacher Training in Malawi: Efficiency and Costs



Cost-Efficiency of IPTE 1+1 Programs: Combining the information on efficiency discussed above (namely the percentage of enrollees who complete their TTC-based training, complete their school-based practice teaching, and become certified teachers) with the information on costs just presented, leads us to an evaluation of the cost-efficiency of the IPTE 1+1 program as it is implemented in each of the TTCs. The chart below is divided into four quadrants based on efficiency and costs as compared to the averages for the set of nine TTCs. The top left quadrant regroups the TTCs that have above average efficiency and below average costs (the good place to be). The top right quadrant includes those with above average efficiency, but above average costs – these are the efficient but costly TTCs. The lower left quadrant is for TTCs that have below average efficiency and below average costs – they are not expensive, but not terribly efficient either. Fortunately, no TTCs are in the lower right quadrant, which would include those that have below average efficiency and above average costs.

Costs and Efficiency of TTCs



Source: Author's calculations

Emmanuel and Amalika are well above average in their costs, so even though they are above average in the percent of trainees who become certified, their cost-efficiency is very poor. In fact they have very high costs per certified teacher produced (kw 658,000 and kw 819,000 respectively), because their unit costs per trainee are so high. Chilangoma, though it has a below average unit cost, has the lowest efficiency, so its cost per certified teacher produced

(kw 677,000) is in the same range as that of Emmanuel and Amalika. The most cost efficient TTCs are Blantyre, Kasungu and Karonga – all with below average costs and above average efficiency. Lilongwe, which has one of the highest rates of efficiency, is not as cost-efficient because its unit costs are higher.

Table 6 presents the average cost per certified teacher produced for each TTC. These figures are determined by dividing the unit cost of each TTC by the percentage of TTC enrollees who end up obtaining teacher certification. Averages for the most recent years of data are used and the resulting value is rounded to the nearest thousand.

Table 6: Cost-Efficiency of TTCs

	Cost per Certified Teacher Produced
Blantyre	142,000
Kasungu	174,000
Karonga	197,000
St. Joseph	255,000
Lilongwe	258,000
Maryam	350,000
Emmanuel	658,000
Chilangoma	677,000
Amalika	819,000

Source: Author's calculations

Long-Term Cost Efficiency of IPTE 1+1: One

way to assess the long-term efficiency of IPTE 1+1 is to determine the percentage of teachers trained through this program that is still serving in primary schools. Data from the MOEST's EMIS identifies teachers by the type of pre-service training they received, and show that there are currently 10,688 teachers in primary schools (2010 EMIS data) that are designated as having been trained in IPTE 1+1. But, the EMIS data do not indicate which IPTE cohort they belonged those teachers belong to. In the information system there is a field for a teacher's initial date of assignment to a school, which could be used to determine when they would have completed their training. However, for over 60% of the IPTE 1+1 teachers in the EMIS, the date of their first teaching assignment is missing. So we cannot analyze the long-term efficiency of each cohort. We can however estimate the overall rate at which teachers trained through IPTE 1+1 remain in schools.

The total number of trainees belonging to all five cohorts of IPTE 1+1 included in this analysis is 18,012. That represents the total number of teachers trained. If now there are only 10,688 IPTE trained teachers in schools, then fully 41% of those trained at a TTC did not remain in a teaching post in a primary school. This represents an approximate loss of kw 1.75 billion (government and private resources combined, since the calculation includes graduates of public and private TTCs), the estimated cost one year of TTC-based training for the over 7,000 people who no longer are teaching.

ODL Training: The ability of this study to include analysis of the Open Distance Learning teacher training program is severely constrained by the lack of reliable data. The data that we

were able to obtain are presented here to at least provide some illustration of what is happening with this alternative route into the teaching profession.

As stated in the introduction, ODL training of teachers is only in operation since 2009. MOEST has recruited two cohorts of trainees. They have received an initial orientation, delivered at one of the public TTCs, and then have been placed in schools. TTC tutors and primary education advisors are to supervise and support them while they are completing their ODL modules and serving as full-time teachers in their assigned schools. Table 7 provides the available data on ODL trainees receiving their orientation at the listed TTCs and ostensibly serving under the guidance of tutors from those same institutions.

Table 7: ODL Enrollment

	2009 ODL Trainees			2010 ODL Trainees		
	Male	Female	Total	Male	Female	Total
Blantyre	468	211	679	811	251	1,061
Karonga				326	163	489
Kasungu	471	253	724	785	288	1,073
Lilongwe	730	154	884	740	0	740
Machinga				330	246	576
St. Josephs		600	600			

Source: TPDS survey of TTCs

Totals are not provided because data are missing for each cohort. Only two TTCs provided data on the budgets they have received for ODL training. St Joseph TTC received kw 1,000,000 in 2009 to cover the initial orientation of the 600 trainees assigned to it. They received an allocation of over kw 5 million in 2010, but the number of trainees that allocation is meant to cover is not available. Kasungu TTC received kw 6 million in 2009 and kw 10 million in 2010. Given the enrollment numbers in Table 7 for Kasungu, they expended kw 8,287 per enrollee in 2009 and kw 9,320 per enrollee in 2010. Clearly the cost per ODL student is dramatically lower than the cost per IPTE 1+1 trainee, largely because the ODL costs need only cover a short duration residential orientation (according to figures from Kasungu TTC, roughly 70% of the 2010 allocation was related to trainee orientation, and only 30% was for supervision of trainees).

No data are available that would permit calculation of the efficiency of ODL training. To do so, we would at least need data on the number of trainees completing the first set of training modules in order to see the pace at which trainees are moving through the distance-based program.

4. Conclusions and Policy Implications

Recall the questions that summarize the purpose of this study, namely:

- How efficiently are the TTCs producing graduates of the one year residential training program who can be placed in schools?
- How efficiently are the TTCs producing certified teachers – those who have successfully completed the 1 year residential and 1 year on-the-job components of the IPTE 1+1?
- How expensive is the IPTE 1+1 program?
- How expensive is the ODL program?
- How do costs vary across TTCs?

The answer to the first question is that overall, most of the loss of teacher trainees is occurring during or at the end of the year of TTC-based training. Which leads to the answer to the second question – overall, about 16% of those receiving teacher training do not end up serving as certified teachers in Malawian primary schools. There is greater inefficiency in the training of female teachers (25% do not become certified) than among males (10% do not become certified).

In wanting to improve the efficiency of teacher training, MOEST may wish to consider two courses of action.

The first concerns teacher recruitment. Some of the drop out in the first year of teacher preparation may have to do with the lack of adequate screening of people recruited into teacher training to ascertain the extent to which they are committed to eventually serving as teachers. Since the cost of the TTC-based training is the most expensive element, and those costs are borne principally by the MOEST, it would be prudent to assume those costs only for training candidates who evince an appropriate level of commitment to the profession. In fact, it may even be desirable to establish a formalized commitment serve as a teacher for a set number of years as a pre-requisite criterion for enrolling in a TTC.

The second possible avenue of intervention to improve TTC efficiency concerns the nature and quality of the TTC-based experience. This study is not able to explore how the conditions in different TTCs impact students' willingness to persist in their training. But, given that we have unearthed some variation in rates of efficiency/dropout across the different TTCs, it should be possible to identify why students in some institutions dropout more than in others and why women dropout more than men – perhaps leading to some insight into how to improve the

quality of the courses of study, the conditions of student life and the extent to which supportive services may be needed to assist students during their training (e.g., especially for female students who appear to abandon their training for social reasons).

In examining the variations in the costs, efficiency and cost-efficiency of the IPTE 1+1 program as administered through the different TTCs, we can reach the following conclusions.

The most expensive TTC, on a per student basis, is more than five times as costly as the least expensive. The sizes of the student bodies and the levels of staffing of the different TTCs drive these very large differences in costs. Such wide variation is a clear sign that there is little to no enforcement of norms for the staffing, enrollment, or budget of TTCs.

In terms of cost efficiency, the TTCs for which there are sufficient data to conduct such an analysis can be divided into three categories as shown here:

Cost Efficient TTCs	Blantyre; Kasungu; Karongo	These TTCs have low unit costs and fairly reasonable rates of efficiency (defined as the percentage of enrollees who eventually become certified)
Less Cost Efficient TTCs	St Joseph; Lilongwe; Maryam	These three TTCs are less cost-efficient than the previous group, primarily because they have higher costs
Cost Inefficient TTCs	Emmanuel; Chilangoma; Amalika	These three have particularly high costs, or in the case of Chilangoma, very high rates of inefficiency.

Four things are apparent from this analysis. First, TTCs need to be of sufficient size to achieve economies of scale, and thus operate at lower per student costs. However, they cannot be so large as to then compromise the quality and conditions of learning, thereby jeopardizing how efficiently they can produce successful graduates who then go on to become certified teachers.

Second, norms for staffing need to be established and set out as criteria for TTC operation. Some colleges are operating at student-to-staff ratios that are three to five times lower than those of other colleges (see Table 5), and these overgenerous staffing ratios are what account for the high per student costs in some TTCs.

Third, budgets should also be more rationally developed, with resource allocations based on the needs of the particular student bodies (in terms of number, composition and need) being served by each college.

Fourth, and last, MOEST may wish to consider how to establish incentives for TTCs that are linked directly to their rates of efficiency and cost-efficiency. Colleges that can both manage costs and have high percentages of their students going on to become certified teachers should be rewarded, and those that either have either unnecessarily high costs, or low rates of efficiency, or both, should be audited and encouraged/required to take action to improve. While some differences in costs may derive from different facilities and equipment, the available data indicate that staffing ratios are what drives most of the variation. At the end of the day, MOEST should not be concerned with cost in the abstract – as choices about how to use resources should be made by the TTCs themselves – but should monitor the relationship between costs and efficiency and effectiveness.

Regarding analysis of the ODL program, we regrettably are not able to complete that portion of this study because the data collected were so spotty and incomplete. The lack of quality data and the apparent absence of any efforts to consistently monitor and evaluate the progress of ODL trainees is an alarming issue. Correcting this should be a high priority for MOEST and its partners. Furthermore, the problems that arose in attempting to compile and analyze information on the recruitment and preparation of teacher indicate insufficient attention to tracking these kinds of data. Greater effort is needed to define and apply rigorous standards for monitoring, evaluating and analyzing the performance of TTCs and their trainees.

In his report on EMIS – TMIS Integration Charles Matemba (2011) points out that sources of data such as TTCs need support in ensuring the quality of the data. In particular he recommends that in order for the integrated EMIS – TEMIS to function properly there is need to decentralize EMIS to TTCs and increase the data management capabilities of the TTC staff. The data collection problems described above can only emphasize the importance of this recommendation. A properly trained staff would ensure proper functioning of a harmonized EMIS – TEMIS system. This would reduce the inconsistencies in the data and in turn ensure the validity of the conclusions drawn from their analysis.

5. Limitations of Data

As has been mentioned throughout this report, several problems were encountered in data collection, compilation and analysis. For an account of the data collection process, see the

methodological report prepared by the consultants – Stanley Nyirenda and Paul Nkhoma
Some salient points from that report are summarized and reiterated here.

Beginning with the TTC surveys, not all colleges provided the same level of information, making for incomplete data sets on the enrollment and progression of trainees through the residential and in-school portions of the IPTE 1+1 program. Budget data was even more inconsistently provided. Different TTCs did not provide the same set of budget information, and for some individual TTCs, budget data were not consistent from one year to the next (or in some cases, the TTCs only provided a single year of budget data).

In an attempt to fill in some of the gaps in the TTC surveys and to add additional years of data (for example to include earlier cohorts of IPTE 1+1), data were requested from both the MOEST EMIS office and from the Department of Teacher Education and Development (DTED). These data did not include all the TTCs, and did not provide a consistent set of information across all the cohorts under consideration. In addition, consulting these sources led to inevitable conflicts regarding specific pieces of information (e.g., numbers for a given TTC in a given year not matching across two or three sources). When this occurred, we relied on the figures provided by the TTCs themselves when we could. MOEST, and in particular DTED, have tried to address these problems of collecting and maintaining accurate data on teacher training and more generally on the teaching profession. The MOEST EMIS represents the most comprehensive set of data on students, teachers and schools in Malawi, and better alignment between it and the information maintained by DTED and the data that necessarily must be obtained from the TTCs is something which MTPDS is laboring to support.

To correct for the shortcomings apparent in some of the data, we did several things, such as:

- Using only the TTCs for which there were consistent sets of data over several years. This changed, depending on the information we wanted to analyze. So, for example the enrollment information in Table 1 was available for all 12 colleges, whereas the more detailed information (such as the number of trainees completing residential training, being placed in schools for practical training, etc.) was only available for the subset of nine TTCs.
- Using averages across years to compensate for what may have been inconsistencies in data from one year to the next or for missing data in some categories. When doing this, we were careful to exclude missing years from the average calculations.

- For the finance data in particular we only worked with the average budget figures for the two years of data that were collected. This was one way to account for some inconsistencies in the budget information – such as some line items appearing in one year and not the other.

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